tending to show that in the Baltic the tides rise higher in summer than in winter, the author is disposed to attribute the phenomenon rather to local physical causes than to Baeyer's astronomic theory of solar action.—Note on the geological formation of the Juan Fernandez islands, by A. L. Renard. The prevailing rocks throughout this group would appear to be mainly basaltic, with little or no trace of lavas or other recent eruptive matter.—On some new groups of fossil remains from the Upper Chalk and Lower Eocene Tertiary formations of Belgium, by Ed. Dupont. These specimens, now mounted in the Brussels Museum of Natural History, include fragments of a Dinosaurian (*Orthomerus dolloi*) from the Maestricht district; the head and various bones of the gigantic *Mosasaurus camperi*, from Limbourg and Montague Sainte-Pierre; remains of a new type of Mosasaurian recently described by M. Dollo under the name of *Plioplaticarpus marshi*, from Maestricht; remains of another Mosasaurian from Ciply, new in Europe, but well known in America, which M. Dollo has named *Polygonodon ciplyensis*; the carapaces of two large turtles from Maestricht, *Chelonia hoffmanni*, Gray, and *Ch. suyderbuycki*, Ubags; lastly, the skull of a crocodile affiliated by Dollo to the *Crocodilus affinis* discovered by Marsh in the Eocene of the far west.—Note on the whale captured last May off Fécamp, by P. J. van Beneden. At first supposed to be a *Balænoptera musculus*, L., or else a new species, the author shows that this cetacean is the *Balænoptera rostrata*, Fabricius, a specimen of which was taken in 1878 near Villefranche in the Mediterranean.—A study of François Huet and his philosophic writings, by O. Merten.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, January 7.—"Contributions to the Anatomy of the Central Nervous System of the Plagiostomata." By Alfred Sanders, M.R.C.S., F.L.S. Communicated by Dr. Günther, F.R.S. (Abstract.)

After referring to the literature of the subject, and describing the macroscopic aspect of the brain, and partly the distribution of the cranial nerves, the author proceeds to give an account of the histology of the segments of the brain.

The olfactory lobes are well developed. They present three layers. Internally cells of the smallest category are found; they give off several processes which join a network penetrating the whole layer; through the medium of this network these cells communicate with the glomeruli which form the middle layer. These glomeruli are much better developed than in the Teleostei; here they present a central core of closely intertwined fibrillæ inclosed externally by fibrils of a larger size, in the course of which cells are developed; these are arranged parallel to the long axes of the glomeruli, and join the external layer, which consists of fibres passing from the anterior end of the olfactory lobe to supply the olfactory organ.

In the Rays these lobes are solid, but in the Scyllium, Rhina, and Acanthias they contain a ventricle which communicates through a long peduncle with the ventricles of the cerebrum.

The cerebrum presents externally a layer of neuroglia without cells, or at least with comparatively few; the remainder of the parenchyma presents cells of a medium size which are usually distributed in groups with neuroglia interspersed between them; these groups in Scyllium contain from nine to fifteen cells, in the Rays generally more. Four special groups of cells occur towards the base of the brain, two in the outer and two in the inner walls: from the former arise the anterior commissure, and from the latter the crura cerebri.

Two ventricles occur in the cerebrum of Scyllium, Rhina, and Acanthias which homologise with the lateral ventricles in the cerebrum of Mammalia. At the posterior part they coalesce into one chamber which is in communication with the third ventricle; this chamber is evidently the foramen of Monro. Dr. Wilder is of opinion that the ventricles of the olfactory lobes represent the lateral ventricles, and that their apertures of communication with the above-mentioned chambers homologise with the foramina Monroi. A consideration of the case renders this idea improbable. In the Rays the ventricles are reduced to a very small chamber occupying the posterior end of the cerebrum.

The crura cerebri form two projecting walls of a gutter-shaped passage which communicates with the third ventricle. As Prof. Owen has already pointed out, they probably homologise with the nervous cords which connect the supra- with the infra-œsophageal ganglia in Invertebrata; and it is through the third ventricle that the œsophagus of the probable invertebrate ancestor of the Vertebrata could have reached the present dorsal surface without breaking through nervous tissue; for dorsally the choroid plexus and pineal gland cover in this ventricle, there being no nervous tissue here, and inferiorly it communicates through a chamber in the hypoarium with a chamber in the centre of the pituitary body; the endothelium lining the former being continuous with the endothelium lining of the latter.

The optic lobe which arches over the aqueduct of Sylvius corresponds to the tectum lobi optici of the Teleostei; the structure is much simpler, although comparatively speaking the lobe is larger. Externally it is occupied by the fibres of origin of the optic nerve; within these a transverse commissure is visible homologising with the transverse commissure in the tectum lobi optici of Teleostei. Internally a ganglion of large cells occurs variously arranged in the different species; these cells are of large size, but differ from the cells of the ventral horn of grey matter of the cord in texture, and in the fact of giving off only one process as a rule, which process runs into the above-mentioned transverse commissure. Numerous cells of small size, many of which are fusiform, occur in this lobe; these are more numerous in the centre.

The author's researches do not bear out the statement of Rohon that the thalamencephalon projects backward and covers the mesencephalon in the optic lobe; so that according to this author it is composed of both these segments of the brain. Apart from embryological considerations, which give no countenance to this idea, there is nothing in the structure of this lobe which indicates an origin from two distinct primary vesicles of the brain; on the contrary, its structure is homogeneous.

The cerebellum presents a structure corresponding to that in the Teleostei. There are, counting from within outward, the granular, fibrous, Purkinje cells, and molecular layers. The differences consist in the greater number of processes given off by the Purkinje cells, and in the greater number of small cells found in the molecular layer. Another difference is found in the presence of a ventricle which is largest in Rhina, Acanthias, and Scyllium, and reduced to very small dimensions in the Raja.

The molecular layer is continued down on to the surface of the medulla oblongata from the cerebellum, forming the restiform bodies. In the spinal cord there are distinguishable three columns on each side: a dorsal above the dorsal cornu, a lateral at the side, and a ventral beneath; the latter consists of fibres of a larger calibre than those constituting the other columns, but no gigantic fibres—the so-called Mauthner's fibres—are present, as in the Teleostei.

The deep origins of the cranial nerves. The optic nerve arises as above-mentioned from the outer half or more of the optic lobes, also by a few fibres from the hypoarium. This fact was contradicted by Bellonci in reference to the origin of this nerve in Teleostei, but further researches and consideration compel the author to adhere to his original statement.

The oculomotor arises from a ganglion in the floor of the aqueduct of Sylvius. There is no decussation of the fibres of origin of this nerve as is stated by some authors; the error probably arose from the presence in this region of a decussation of fibres derived from the transverse commissure in the optic lobe: this decussation of fibres corresponds to the commissura ansulata in Teleostei.

The facial arises from a small bundle of fibres which comes forward from the lateral columns of the cord, and is situated at the side of and slightly above the central canal.

The trifacial arises from a tuberosity overhanging the fourth ventricle immediately contiguous to the restiform bodies, also from the grey matter of the floor of that ventricle.

The vagus arises from a series of rounded tubercles which occupy the lateral portions of the floor of the fourth ventricle.

Linnean Society, January 21.—W. Carruthers, F.R.S., Vice-President, in the chair.—Mr. Harry Veitch exhibited, in illustration of Dr. Masters's paper, a series of living conifers, among which were: *Abies Fortunei*, *A. nobilis*, *A. grandis*, and *A. amabilis*; also *Pseudolaryx Kæmpferi*, *Picea Omorika*, *Pinus Pencei*, *Arthrotaxis selaginoides*, and others.—Mr. E. M. Holmes exhibited a specimen of the ergot of Diss (*Arundo tenax*) from Algeria. This ergot is said to be more active medicinally than that of Rye, and is slenderer and twice or thrice its length, and is attributable to the fungus *Claviceps purpurea*.—Dr. C. Cogswell drew attention to dried specimens of the species of maples (*Acer*) of Canada collected by him in Nova Scotia, and of *Sisy-*

rhynchum Bermudianum and *Bryophyllum calycinum* from Bermuda. He contrasted the great difference of climate and vegetation of the continent and island, observing that the Gulf Stream doubtless had an important influence on the Bermudan flora; moreover, it was notable that Bryophyllum, like the maples, put on a brilliant red autumnal tint.—There was exhibited for M. Buysman examples of Rudbeckia and Lupinus prepared as teaching specimens of medicinal plants.—Dr. Maxwell Masters read a paper, contributions to the history of certain conifers. This comprised the result of observations on the mode of growth and structure of various species of Coniferæ, concerning which much difference of opinion had previously existed owing to the imperfection of our knowledge. Of late years many of these species had been introduced into cultivation and some of them had produced male flowers and cones, thus affording an opportunity for diagnosing the species and ascertaining their limitations. The study of the cultivated plants had likewise shown the natural range of variation in a species or individual plant under comparatively uniform conditions. Our knowledge of their geographical distribution has also been extended, altogether thus enabling a fresh revision to be attempted.—Dr. T. Spencer Cobbold read a paper on *Strongylus axei*, and its affinities. This diminutive maw-worm, obtained from the stomach of a donkey, possesses interest, inasmuch as its structural characters closely correspond with those of the entozoon infesting the ostrich's proventriculus. It also shows affinity with the grouse strongyle and with the stomach-worm of lambs; while its peculiarities throw light upon other questions of morphology, especially its relations to the singular maw-worm (Simondsia) of the hog.—In exhibiting an extensive series of fossil plants from the Island of Mull, Mr. J. Starkie Gardner gave remarks concerning inferences to be drawn from the well-preserved leaves. He mentioned that this fossil Mull flora comprises but one fern undistinguishable from living *Onoclea sensibilis* of Western America and Eastern Asia. There is an Equisetum. The Coniferæ are abundant; a *Ginkgo* resembles existing species, along with numerous firs and larches, a few of these latter being similar to those of Japan. Monocotyledons are represented by one having a sword-shaped leaf. There are at least twenty species of dicotyledons. A *Platanus* obtains, differing somewhat from the recent form, and with resemblances to what is known as *Credneria* and *Protophyllum* of Cretaceous age. This Mull flora, though possessing few novelties, is interesting as supplying fresh confirmation of the view first propounded by Asa Gray—that formerly the entire northern temperate regions possessed a very uniform flora.

Anthropological Institute, January 12.—Mr. Francis Galton, F.R.S., President, in the chair.—The election of Mrs. C. Brooke (H.H. the Ranee of Sarawak) was announced.—Mr. Bryce-Wright exhibited a bronze sword, of the leaf pattern, found by the late Capt. Sir William Peel, R.N., at Sandy, Bedfordshire.—A collection of flint implements from the junction of the Thames and Wandle was exhibited by Mr. G. F. Lawrence.—Dr. R. Munro read a paper on the archæological importance of ancient British lake-dwellings and their relation to analogous remains in Europe. The lake-dwellings of Scotland were essentially the product of Celtic genius, and were constructed for defensive purposes. Dr. Munro believes that those in the south-west parts of the country attained their greatest development in post-Roman times, after Roman protection was withdrawn from the provincial inhabitants, and they were left to contend single-handed against the Angles on the east and the Picts and Scots on the north. He suggested the theory that the British Celts were an offshoot of the founders of the Swiss lake-dwellings, who emigrated into Britain when these lacustrine abodes were in full vogue, and so retained a knowledge of the custom long after it had fallen into desuetude in Europe. Amongst other arguments in support of this hypothesis, Dr. Munro pointed out that the geographical distribution of the lake-dwellings in Europe closely corresponds with the area formerly occupied by the Celts, and that they are identical in structure with the crannogs.—In a paper on three stone circles in Cumberland, Mr. A. L. Lewis showed that in these circles, as in others previously described by him, there is a marked preponderance of outlying stones and prominent hills towards the north-east, and that the circle-builders followed the Babylonians rather than the Egyptians in their rules of orientation. In the relation between stone circles and adjacent hills and outlying stones, suggestions might be found not only of sun-worship, but also of mountain-worship and of phallic worship.

Royal Meteorological Society, January 20.—Mr. R. H. Scott, F.R.S., President, in the chair.—The Secretary read the report of the Council, which stated that the past year had been one of great activity, as the eight Committees which had been appointed had met frequently, and had done much for the advancement of meteorology. The number of Fellows on the roll of the Society is 537.—The President in his address said that, as he had treated of land climatology in his previous address, he proposed to deal with marine climatology on the present occasion, and to take up the subject at the point where he had left it in his paper, "Remarks on the Present Condition of Maritime Meteorology," printed in the Society's *Quarterly Journal* for 1876. He enumerated the various investigations which had been announced to be in progress at that date, and specified the several outcomes of these inquiries which had seen the light during the ten years. The "Meteorological Charts for the Ocean District adjacent to the Cape of Good Hope," published by the Meteorological Office in 1882, were first noticed, and the methods of "weighting" observations of wind, &c., employed in that discussion were fully explained, as well as the mode of representation of barometrical results. The "Charts showing the Surface Temperature of the Atlantic, Indian, and Pacific Oceans," published in 1884, and those of barometrical pressure, now in the engraver's hands, were next noticed; and it was announced that the Meteorological Council had decided to undertake the issue of monthly current charts for the entire sea-surface. The wind charts published by the late Lieut. Brault, of the French Navy, were next described, with an expression of the profound regret with which the intelligence of his premature death in August last had been received by all meteorologists. The wind charts and pressure tables issued by the Meteorological Institute of the Netherlands were then explained, and also the publications of the Deutsche Seewarte at Hamburg, "The Atlas of the Atlantic Ocean," &c. The series of "Monthly Charts for the Atlantic and Pacific Oceans" issued by the Hydrographic Office, Washington, were then described, and the present series of "Pilot Charts" issued by the same office were explained. As for projected work in 1886, Mr. Scott stated that the daily maps of Atlantic weather for the year of the circumpolar expeditions were now complete, and were being engraved, a process which must take several months. The German Office had undertaken the preparation of daily weather maps for the same period for the South Atlantic. The Meteorological Office had also taken up the marine meteorology of the Red Sea. The Dutch Institute had announced its intention to publish an atlas for the Indian Ocean. In conclusion Mr. Scott stated that there still existed a lamentable want of data for the Pacific Ocean, but that, thanks to the energy of the Canadian Government in opening up their new Pacific Railroad, it was to be hoped that every year would bring a greater amount of traffic to British ports on the Pacific Coast, and therefore a greater number of observations to the Meteorological Office, while from the existing trade to San Francisco a mass of materials was quickly accumulating for certain routes at least over the vast area of the Pacific.—The following gentlemen were elected the Officers and Council for the ensuing year:—President: William Ellis, F.R.A.S.; Vice-Presidents: George Chatterton, M.Inst.C.E., Edward Mawley, F.R.H.S., George Mathews Whipple, F.R.A.S., Charles Theodore Williams, M.D., F.R.C.P.; Treasurer: Henry Perigal, F.R.A.S.; Trustees: Hon. Francis Albert Rollo Russell, Stephen William Silver, F.R.G.S.; Secretaries: George James Symons, F.R.S.; John William Tripe, M.D.; Foreign Secretary: Robert Henry Scott, F.R.S.; Council: Edmund Douglas Archibald, William Morris Beaufort, F.R.A.S., Arthur Brewin, Frederic William Cory, M.R.C.S., Henry Storks Eaton, Charles Harding, Richard Inwards, F.R.A.S., Baldwin Latham, F.G.S., John Knox Laughton, F.R.G.S., William Marcet, M.D., F.R.S., Cuthbert Edgar Peek, F.R.A.S., Capt. Henry Toynbee, F.R.A.S.

Physical Society, January 23.—Prof. Guthrie, President, in the chair.—The following communications were read:—A note on the paper by Prof. W. Ramsay and Dr. S. Young on some thermodynamical relations, by Prof. W. E. Ayrton and Prof. John Perry. The authors, after referring in the highest terms to the careful experimental work of Messrs. Ramsay and Young in their investigation upon "some thermodynamical relations," the results of which were communicated to the Society at its last meeting, show that the four laws stated in their paper are in reality only one, since if any one of them is assumed the remaining three may be deduced from it. Hence it is sufficient

to examine only one, and of the four the third is in the form that can be most readily tested. This law, the statement of which is, that for all substances at any given pressure the product $t\frac{dp}{dt}$ is constant, p being the pressure, and t the absolute temperature of saturated vapour at that pressure, is represented mathematically thus—

$$t\frac{dp}{dt} = \phi(p) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$\phi(p)$ being a function of the pressure, independent of the substance. Writing this equation

$$\frac{dp}{\phi(p)} = \frac{dt}{t}$$

and integrating, we get

$$t = a\psi(p) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

$\psi(p)$ being also a function of the pressure only, and a a constant depending only upon the substance employed. It is in this form that the authors have examined the third law; if true, it follows at once from (2) that the ratio of the temperatures of two saturated vapours to one another at any pressure is the same as the ratio at any other pressure. It is seen, however, either by reference to Regnault's numbers, or Rankine's formula—

$$\log p = d - \frac{\beta}{t} - \frac{\gamma}{t^2} - \quad . \quad .$$

an expression based upon his molecular theory, and which, as remarked by one of the authors at the last meeting, agrees with Regnault's results with remarkable closeness, that this ratio is far from constant. The authors are therefore compelled to conclude that the expressions given by Prof. Ramsay and Dr. Young must not be regarded as absolute laws.—A note on the paper by Prof. J. W. Clarke on the determination of the heat-capacity of a thermometer, by Mr. A. W. Clayden. The author has applied a correction to an expression given by the late Prof. J. W. Clarke for measuring the heat-capacity of a thermometer, in a paper communicated to the Society at a previous meeting (April 25, 1885). Prof. Clarke's expression was affected by the mercury not entirely filling the bulb and stem of the thermometer. The corrected expression obtained by the author is

$$V_1 = \frac{V(s - s_2)}{s_1 - \frac{s_2(1 + \beta)}{1 + \alpha t}}$$

s, s_1, and s_2 being the mean densities of the instrument, mercury, and glass respectively, β and α the coefficients of voluminal expansion of mercury and glass, V and V_1 the volumes of the instrument and of the mercury.—Note on some organic substances of high refractive power, by Mr. H. G. Madan. In the course of some correspondence respecting M. Bertrand's polarising prisms, the author was informed that the cement used was napthyl-phenyl-ketone dibromide. He has consequently prepared specimens of the ketone, and subjected them to optical examination. The ketone is a thick yellow oil, boiling at a temperature near the boiling-point of mercury; it appears to be a very stable, neutral, and harmless substance like Canada balsam, but unfortunately it does not appear to be capable of hardening, and hence is not by itself adapted for a cement. Its refractive index for the D line is 1·666, higher than that of carbonic sulphide, while its dispersive power is approximately the same as that of that substance. The author has made the bromide of the ketone referred to above, but it seems liable to decompose with formation of hydrobromic acid, which acts upon the spar. Mr. Madan also exhibited a specimen of metacinnamene, a highly refracting glass-like solid obtained by the action of light or heat upon cinnamene. This substance possesses a refractive index of 1·593 for the D line, and would make a valuable cement if it showed a firm adhesiveness for glass.—The President exhibited and described an instrument he had made in the course of an acoustical investigation upon which he had been engaged. It is a musical instrument similar in principle to the harmonicon. In the case of the harmonicon the rectangular plate is usually supported by strings passing through the nodes, but the author wished to make an instrument that could be "bowed." The "nodes" are not absolute positions of rest, the particles at them describing curves having cusps pointing outwards. The plan adopted was to solder two springs to the plate, which was of brass, the points of attachment being slightly outside the nodes, and the springs being such as to give the same fundamental note as the plate. The other ends of the springs were attached to the mouth of a resonator whose fundamental note was also that of the plate. The plate when struck or bowed gave a tone very like that of a tuning-fork, and in a discussion that followed, Prof. S. P. Thompson suggested the possible use of these instruments as a substitute for a series of forks the cost of a complete set of which often places them beyond the reach of the student. Prof. McLeod suggested that the springs should be tuned to the octave of the plate instead of to its fundamental, and that they should have a slightly different form.

Edinburgh

Royal Physical Society, January 20.—Prof. Turner, F.R.S., President, in the chair.—Obituary notice of the late Dr. Carpenter, by Prof. Ewart.—The President read a paper on the occurrence of the bottle-nosed whale (*Hyperoodon rostratus*) in the Scottish seas. After a review of the history of this whale, Prof. Turner proceeded to describe several specimens which had come under his observation, more especially a young male, caught at Dunbar in November 1885. He then compared the external characters of Hyperoodon, Mesoplodon, Ziphius. A detailed description of the rudimentary teeth in the upper and lower jaws of Hyperoodon was also given, and the periods of the year when this animal migrated southwards and northwards were referred to.—Mr. Brook read a paper on the relation of yolk to blastoderm in fish-ova. The author endeavoured to show that the function of the cortical protoplasm surrounding the yolk (the parablast) is primarily a digestive one. The existence of this layer is a necessary consequence of the separation of yolk from protoplasm in meroblastic ova. The material thus elaborated in the parablast is undoubtedly budded off in the form of cells. It has been asserted by Hoffmann and others that these take no part in the formation of the embryo, but are used up in the temporary circulatory system around the vitellus. In the herring, cod, Trachinus, and probably the whole group of pelagic ova, there is, however, no trace of a vitelline circulation, yet cells are produced in the parablast of these forms in the same manner as in the trout. There thus appears no alternative but that the cells must take part in the formation of the embryo. It was therefore argued that, from a consideration of the physiological function of the parablast, the morphological value of this layer is more important than has been hitherto admitted.—A note was communicated from Mr. Dendy, on an abnormal specimen of Comatula (which had twelve arms) from the Firth of Clyde; Mr. Raeburn read extracts from his journal on the birds of the Shetland Islands; and Mr. Muirhead exhibited a specimen of the Glossy Ibis (*Ibis fascinellus*) shot last September on the borders of Roxburghshire, and a Garganey shot last February in Berwickshire.

Dublin

Royal Society, December 16, 1885.—Physical, Experimental, and Applied Science Sections.—Sir Robert W. Jackson, C.B., in the chair.—On the description by points of the principal caustics of a circle, by G. Johnstone Stoney, D.Sc., F.R.S.—Meteors and meteorites, by W. H. S. Monck, M.A.—On the fog-penetrating power of the double quadriform burner, by Prof. W. F. Barrett. The author described the results of some experiments recently made to test the illuminating power of Mr. Wigham's latest adaptation of gas to lighthouse illumination. The double quadriform burner consists of a series of four superposed 88-jet gas-burners placed alongside of four similar superposed burners. The eight burners are in one plane, parallel to which, and at the proper focal distance, are placed eight annular lenses on one side, and a similar set of lenses on the other side. The lights blend into one at a distance of about 1500 feet from the lighthouse. Experiments were made on two evenings, both of which were foggy. On the second evening the fog was so dense that a powerful revolving light less than half the distance of the double quadriform was entirely cut off, and the sound of a large fog-siren, driven by a gas-engine and placed alongside the experimental light, was also extinguished by the fog; nevertheless, on both occasions the double quadriform was easily seen by the naked eye, and its position readily determined, at six miles' distance. The author expressed his unqualified satisfaction at the result of his observation, and hoped that the authorities at Trinity House would be induced to come to Dublin and judge for themselves of the merit of Mr. Wigham's invention.

Section of Natural Science.—V. Ball, M.A., F.R.S., in the chair.—Note on the deposit of supposed worked flint implements at Thenay, near Blois, by Prof. J. P. O'Reilly, C.E.—On the occurrence of a tract of Old Red sandstone and Conglomerate amongst the Knockalla Hills, co. Donegal, by Prof. E. Hull, LL.D., F.R.S.—On a Clogg almanac in the Science and Art Museum, by B. H. Mullen, B.A.—Prof. Haddon exhibited models made by Krantz, illustrating the evolution of the shells of fossil Cephalopoda.—Mr. Greenwood Pain exhibited a remarkable fungus-growth on paper.—Mr. V. Ball exhibited a specimen of meteoric iron from Glorieta Mountain, New Mexico.

PARIS

Academy of Sciences, January 25.—M. Jurien de la Gravière, President, in the chair.—Remarks in connection with a heliographic engraving representing the aërostatic experiments at Chalais-Meudon presented to the Academy by M. J. Janssen.—Studies on a phanerogamous plant (*Cymodoceites parisiensis*) belonging to the order of the Naiadeæ, which flourished in the marine waters during the Eocene epoch, by M. Ed. Bureau. This new genus, which is named Cymodoceites, in consequence of its numerous points of analogy with the genus Cymodocea, was widely diffused over the Paris basin, and tends to confirm the Indian affinities of the Middle Eocene flora already revealed by Ottelia, Nipadites, *Nerium parisiense*, &c.—Description of a differential sphygmograph invented for the purpose of easily demonstrating the peculiar veinous circulation "by influence" discovered in 1875, by M. Ch. Ozanam.—Further observations and studies on the parthenogenetic reproduction of the Phylloxera of the vine, by M. P. Boiteau. The fifteenth generation, obtained during the year 1884 by cultivation in tubes, was increased by a new series of four generations in 1885. All are at present hibernating, and appear to show no symptoms of degeneracy. Nevertheless the Phylloxera, after a prolonged existence, will probably become less vigorous, and, like the oïdium, anthracnose, and mildew, may cease to be destructive to the plants which it infests.—Note on the comet recently discovered by M. Fabry at the Paris Observatory, by M. Weiss.—Orbit and ephemeris of Fabry's comet, calculated by M. Lebœuf. The elements of the orbit deduced from observations made at Paris on December 1 and January 10 are as under :—

T = 1886 April 6, 1372, Paris Mean Time

$$\left.\begin{array}{rl} \omega = & 126^\circ\ 30'\ 48''\cdot0 \\ \Omega = & 36\ 23\ 29\cdot1 \\ i = & 82\ 46\ 5\cdot5 \end{array}\right\} \text{Mean Equinox of 1886·0.}$$

$$\log q = 9\cdot808992$$

—Determination of the error of the constant of astronomical refraction by meridian observations, by M. A. Gaillot.—Note on the residuums of the double integrals, by M. H. Poincaré.—On the theory of linear equations, by M. E. Goursat.—Note on telemicrophonic instruments, by M. E. Mercadier. By telemicrophone the author understands a combined apparatus simultaneously producing the effects of the microphone and telephone, and reversible like the latter. He has constructed instruments of this kind, for which he claims the following advantages over the ordinary microphone : the possibility of a double mode of transmission with the same apparatus ; reversibility of the transmitter, whereby the reception is greatly simplified ; reduction of the number of organs on the microphonic posts, and consequent diminution of the total resistance of the apparatus on the same line. By this reduction the construction of the instrument may also be simplified, and its size considerably reduced.—Observations in connection with Prof. Langley's recent note on the hitherto recognised wave-lengths of light and sound, by M. Henri Becquerel. The statement attributed to the author by Prof. Langley that the most extreme radiations whose existence has been experimentally determined, do not reach a wave-length of 0·0015 mm., is denied, because the limit of observation depends essentially on the nature and delicacy of the methods employed to reveal the presence of ultra-red invisible rays.—On the transmission of copper through a volume of gas, and on the direct combination of copper with nitrogen, by M. R. Blondlot.—On some properties of the sulphur of antimony, by M. A. Ditte.—On a reagent, by means of which it may be possible to detect the acid function of the weak acids, by M. R. Engel.—On the composition of brandies distilled from wine, by M. Ch. Ordonneau. In order to ascertain the cause of the difference between neutral spirits distilled from grain, beet, potatoes, &c., and true wine brandies, the author has made a series of analyses, from which it appears that the unmistakable flavour of the latter is due to the presence in small quantities of a terpene boiling at 178° C., and whose products of oxidation are characteristic of old brandies.—On the digestive apparatus of the Phylloxera (*Ph. punctata*), by M. Victor Lemoine.—Note on the comparative morphology of the labium in the Hymenoptera, by M. Joannes Chatin.—Zoological and anatomical observations on a new species of Balanoglossus (*B. sarniensis*), discovered in the month of August 1885 at the island of Herm, a little east of Guernsey, by M. R. Kœhler.—Note on the roots of the Calamodendreæ (*Calamodendron striatum*, *C. congenium*, &c.), by M. B. Renault.—On the pollinic tube and its physiological *rôle* ; a new reaction of the deposits improperly called cellulose knots, by M. Ch. Degagny.

BOOKS AND PAMPHLETS RECEIVED

"The Pictorial Arts of Japan," part i. section 1, General History : Wm. Anderson (S. Low and Co.).—"Calendar of University College of South Wales and Monmouthshire," 3rd Session. 1885 and 1886 (Owen. Cardiff).—"Proceedings and Transactions of the Royal Society of Canada for the Year 1884," vol. ii. (Dawson, Montreal) —"Elements of Chemical Physics," 4th Edition : J. P. Cooke, Jun. (Macmillan and Co.).—"A Text-Book of Deductive Logic," 2nd Edition : P. K. Ray (Macmillan and Co.)—"The Year-Book of Treatment for 1885" (Cassell).—"Dogs in Health and Disease" : J. S. Hurndall (R. Gould). —"Modern Science" : Edward Carpenter (Heywood).—"Chemistry of the Non-Metallics" : Dr. E. B. Aveling (Hughes).—"The Reign of Law in Medicine" : Dr. Dyce Brown (Trübner).—"University of Wales Calendar, 1885-86" (Cornish, Manchester).

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